

# ***THE B&O MODELER***

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**BUILDING A B&O S-1/S-1A IN N-SCALE  
 PROTOTYPE MODELS' B&O CLASS P-24/P-25 FLAT CAR  
 B&O MODELS FROM PROTOTYPE MODELERS MEETS**

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Cover Photos – Top, N Scale Big Six – Tony Hines photo. Middle, HO Scale P-24/P-25 Flat Car – Elden Gatwood photo. Bottom, HO Scale M-26a – Ben Hom photo.

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## AN INVITATION TO JOIN THE B&O RAILROAD HISTORICAL SOCIETY

The Baltimore and Ohio Railroad Historical Society is an independent non-profit educational corporation. The Society's purpose is to foster interest, research, preservation, and the distribution of information concerning the B&O. Its membership is spread throughout the United States and numerous foreign countries, and its scope includes all facets of the B&O's history. Currently the Society has over 1600 registered members.

Members regularly receive a variety of publications offering news, comments, technical information, and in-depth coverage of the B&O and its related companies. Since 1979, the Society has published a quarterly magazine, *The Sentinel*, dedicated to the publication of articles and news items of historical significance. Other Society publications include monographs, calendars, equipment rosters, and reprints of original B&O source material. Their

purpose is to make otherwise unobtainable data available to the membership at reasonable cost.

Membership in the Society is a vote of support and makes all of the Society's work possible. It provides those interested in the B&O with a legitimate, respected voice in the railroad and historical communities. By working together, B&O fans are able to accomplish much more than by individual efforts. No matter how diverse your interests or how arcane your specialty, others share your fascination with America's most historic railroad. We invite your participation. Several classes of [annual memberships](#) are available. Regular memberships are only \$35.00. If you would like to join, click [here](#) to fill out our [membership application](#), print a copy and mail it to:

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## FROM THE EDITOR

### Why Write an Article for *The Modeler* or *The Sentinel*? Or When a Tree Falls Does It Make a Sound?

As readers of *The B&O Modeler* and specifically ones that read this section of the magazine, you will now be subjected to some of my personal trials and tribulations. I will try to relate them to modeling and hope we are all the better for this exercise. This fall I

am pursuing my PhD in earnest and it will consume much of my time. In fact, it has led me to search for a replacement for myself as Editor. That search has proved unsuccessful to date, but if things get more hectic or a volunteer does not step forward we may



have to reconsider this volunteer effort's publishing deadlines. No crisis at this moment, but something to consider. If you want more from the Society, this is a chance to act to get it. In my preliminary coursework I have learned many things about how knowledge is created and how it is transferred to others. This is where my learning about higher education and historical modeling intersect; knowledge creation and its transfer to others. There are plenty of ways to describe knowledge and knowledge creation. There are metaphors, simple ways to describe it, we all have somewhere in us. Many of us prescribe to a model that knowledge is something that is poured into our brains from our learning or reading. This discounts the fact that we all judge what others tell us and decide how true it is. Jim Mischke says all B&O F-7's had creased pilots and we believe it because it is posted on the Yahoo group and no one disagrees. The knowledge is actually created when we all agree or do not disagree with Jim's assertion. Jim knowing this fact to be true does not make it so, it's when a bunch of people agree (or don't disagree) that we accept it as "fact" or knowledge. This is something to think about.

So the things Jim knows are only true when most of us believe them to be true based on our experiences. If anyone's ideas are only presented to the B&O Yahoo group, are they well scrutinized and accepted by many? Fortunately for us Jim is working on a book to insure his knowledge is more widely reviewed and accepted. What about the rest of us? I have some unique insight about my experiences with B&O Track Gangs in the 1980's, but until I write it down does it exist as knowledge? Harry Meem asked me a number of years ago to write an article about my experiences, but until I publish the article or

record it in some way, it's just my thoughts. When I write it down, subject it to review, and publish it, I suggest it becomes knowledge. When something becomes "knowledge" is open to great debate, but I'll stick with the model that until it is communicated and agreed to, it does not exist, just like the sound of the tree in the woods.

What the heck does this have to do with modeling? It is particularly applicable to modeling, the closer one comes to replicating the prototype, but applies to all of us who create new models and new techniques. The first time you create a new model you have created new information and following my model of "knowledge" you have also created new knowledge when you share it. We all have original thoughts and ways of doing things when it comes to modeling and I think we do not always think of them as unique. In fact, they are unique if no one has written them down or talked about them and shared them. *The B&O Modeler* has published some pretty simple articles, but they are actually new knowledge, because it's now written down and has been reviewed and agreed to. Every one of my articles have been just simply information about how I built a simple kit. However, to others they are a source of information as they have not pursued the same path. Is that new knowledge? I suspect many of you have read my articles and thought "so what?" But I hope some of you read them and thought, "I didn't try that" or "I didn't see that photo before", which are all ways of creating new knowledge. That was the goal, no matter how simple I hoped someone learned something new. We all have the ability to share our thoughts and create knowledge, it just requires that we write it down, have it reviewed and share it. Is it really knowledge until we share it?

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## NEWS FROM THE COMPANY STORE

BY CRAIG CLOSE

The new PS-1 40' boxcar models are in from Kadee. There are five different cars with three covering the 1964-68 era and two for 1968-80. Those later era cars have ACI labels. The cars were made by Pullman Standard starting in 1956. The B&O leased a number of them in 1964 with class designation of M-67a. They have a single 6' door. These are Kadee quality, ready-to-run models with trucks and couplers.



You can order the cars at the Company Store web site ([www.borhs.org](http://www.borhs.org)). Typically, even for Society members, there are no discounts on the Kadee products. However, for these cars there will be a 10% discount available to members on a single set of all five different cars. You must be a member and order all five cars on the same order form. Any other cars, even if all five are ordered, must be separated from the discounted set and will not get the discount.

The 2007, fourth quarter Short Blasts also has an order form which includes the discount pricing.

We have over 500 of each car. We would like that number to be reduced to near-zero. Please help attain that goal by ordering now.

For *The B&O Modeler* there is now an index available as item 79001 for \$3.00 plus \$1.50 shipping. Additionally, a CD which includes all issues of the magazine through 2006 has been produced as item 40201. The cost is \$10.00 plus \$1.50 shipping.



Scratch built S-scale model of Q tower at Hardman, WV. Dan Vandermause Model and Photograph

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## UPDATES AND ERRATA

In the July/August *B&O Modeler* on page 13 the statement that the *Genesee River* is the only surviving car of this group is incorrect. Of this group, the *Wabash River* was destroyed in a derailment in West Virginia in 1967. However after retirement from active service on the B&O, the *Genesee River* and the *Maumee River* went to new owners. *Genesee River* was displayed at the B&O RR Museum and later went into outdoor storage in the Mt. Clare shop complex where it was twice vandalized by fire in the 1980's and scrapped on site. *Maumee River* was sold to a private party, and the last I heard of the *Maumee River*, it was in Massachusetts and in reasonable shape, still in private hands.

Joe Nevin

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## MODEL PRODUCT REVIEWS

EDITOR NEEDED

### HO Scale

#### ProtoWest Models' B&O Class P-24/P-25 Flat Car Kit

By Elden Gatwood, *Model photography by the author.*



### Introduction

This review, and abbreviated construction article, covers ProtoWest Models' new HO-scale B&O Class P-24/P-25 flat car kit. It offers two flat cars in every kit and is a significant addition to the limited offerings of B&O flat cars available, and also represents a numerically-significant group of cars on the railroad. As a resin kit, it does require construction, painting, and decaling, but this particular kit also offers a good introduction to the world of resin kits, due to its ease of assembly and finishing.

### The Prototype

The P-24, P-25 (and P-25a sub-class), P-31 and P-32 classes of flat car were introduced in 1948, 1951, 1955 and 1956, respectively, following the introduction and widespread acceptance of AAR-sponsored 70-ton flat car designs. The B&O chose one of the AAR 70-ton flat car designs for its own use in its new P-24 and P-25 class of flat cars, and

possibly cloned this as its later brethren. The P-24/P-25 appears to have been followed in 1955 and 1956 by the P-31/P-32 class, which seemingly shared the same exterior appearance. It is not confirmed that the P-31/P-32 class cars followed this design exactly. All of these cars were sturdy and enjoyed long service lives, with most modified and re-classed into various sub-classes, many for dedicated use, late in life. Many were converted to TOFCEE service, but as trailer length increased were converted back to general service flat cars.

The cars were 53'6" IL, 10'6" IW, 54'3" OL, 10'6" OW, 10'6" EW, 3'5" OH, 70-ton capacity flats, of riveted construction, with 14 stake pockets and twin fishbelly center and side sills. A wooden deck featured steel frame members exposed at each end, a distinctive feature of the design. The cars were to the B&O as kits from Greenville and built in B&O Shops.

The following data may help you number and decide the service for your P-24/P-25 and possibly P-31/P-32 flat cars:

Class P-24: Numbered: 8000-8024; 25 built in 1948; 24 left by 1964. *General Service flat cars.*

Class P-25: Numbered: 8100-8249; 150 built in 1951; only 24 left by 1964. *General Service flat cars.*

Class P-25a: Numbered: 8250-8399; 150 built 1951; only one car left in 1964. *General Service flat cars.*

Class P-31: Numbered: 8400-8499; 100 cars built 1953-55. nine cars left in 1964. *General Service flat cars.*

Class P-25b: Numbered: 8600-8629; 30 cars converted from P-25/25a c.1954; 27 left in 1964. *Equipped to haul auto frames.*

Class P-25c: Numbered: 8650-8693; 43 cars converted from P-25/25a c.1954; 41 cars left in 1964. 8650 to 8693 *Equipped to haul auto frames.*

Class P-25d: Numbered: 8800-8882; converted from cars in classes P-25 and P-25A between 1954 and 1960; 107 cars remain in 1964. *Equipped with bulkheads for hauling plasterboard.*

Class P-31: Numbered: 8900-8979; 80 cars built 1955. 42 cars left in 1964. *General Service flat cars.*

Class P-25c: Numbered: 9800-9845; 43 cars converted from classes P-25 and P-25a c.1954; all 46 cars remain in 1964. *Equipped to haul auto frames.*

Class P-32: Numbered: 9100-9299; 200 cars built 1956. 183 cars left in 1964. *General Service flat cars.*

### **Review of the ProtoWest B&O Flat Car Kit**

The ProtoWest Models kit contains a one-piece frame that incorporates the underside of the deck, end sills, center sills, and side sills, plus a separate deck casting featuring all surface details, and a separate detail casting sheet containing stake pockets, draft gear cover plates, and a brake ratchet casting. The kit contains fine, Delrin stirrup steps.

A decal sheet is included covering all classes of B&O AAR 70-ton flat car, except some of the more unusual, and highly-modified sub-classes.

The kit contains very fine representations of the main structural parts, and most details, of the prototype. The one-piece body casting and deck contain a host of fine details, including the numerous rivets of the prototype. This includes a lot of rivets you will never see, on the underside of the frame member's flanges. Impressive!

My kit did not contain a brake stand mounting plate, as discussed in detail below, in the added assembly notes. The kit does not contain trucks, couplers or paint. All other components were provided.

As mentioned, the instructions supplied with the kit could use some supplementation, although the basic construction is covered well. The kit itself more than makes up for the lack of any data on the B&O classes.

There was no prototype information on the B&O cars contained in the kit, so some is provided above, for your use. Given the complexity of the B&O's usage, modification, and re-assignment under other classes, no guarantee is made as to its accuracy for all periods! I understand that the kit will be provided with two complete assemblies. For the price stated on their website, this results in a per-car price well below that of the average resin kit. If you don't want two, do a deal with a friend!

### **Notes on the Kit, and its Assembly**

The kit consists of a one-piece assembly cast in a fine, grey resin, which can be sanded, cut, and drilled extremely easily. It does not suffer from the

"crumbling" with which some resins react when drilled or cut.

The stake pockets, for which many extras are provided, can be removed from their backing by sanding on fine (400-grit) sandpaper, taped to a sheet of glass. Sand until the backing is very thin, then cut out with a new hobby knife blade, and set aside. The trick to getting good results is not to sand away until the pocket's shape is affected. Stop when the sheet is thin around each pocket, then cut out! Do the same with the brake stand ratchet mechanisms (the little gear and ratchet casting). Set these details aside somewhere safe!

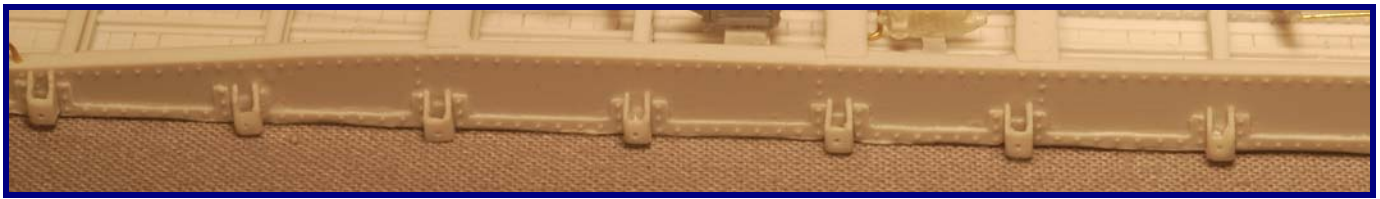
The basic car body can be cleaned up by sanding the blank part of the casting a little bit (for good adhesion), then taking your knife and gently shaving off any unwanted "flanges" off the edges of the sides and end sills. The resin is soft, so go slow and stop before you cut into the car body. Make sure each stake pocket flange is cleaned out, so the pockets will seat properly.

Now clean up the deck casting. Go easy. Do not clean out the stake pocket slots in the deck casting yet. I chose to mount the stake pockets now. I grabbed each cleaned-up pocket that had a good, square appearance, in a set of fine pliers (or tweezers with a grippy textured interior face), then dipped each shallowly in a pool of thin CA place on a sheet of plastic, then popped each into place, jockeying around until square. There is a slight leftward tilt to some of the stake pocket mounting flanges on the face of the side sill, so you may have to jockey them around a bit to get them to look right.

I then rounded up the edges of each stake pocket, with a fine sanding stick, as suggested in the directions. It really does make a difference!

I then created a depression in the center of the face of each stake pocket, with the tip of a hobby blade (or needle), and then followed that up with drilling through the outside face with a #78 bit. This creates the hole in the stake pockets so evident in photos. See the model photo below.





Drill for, and mount, the eight grab irons on the car body. I used a #78 bit, and drilled all the way through. I generally do this whole procedure by grabbing a 18" straight grab iron in my self-locking *Micro-Mark* pliers, cutting the legs short (about 8-12 scale inches) with nippers, dipping the legs in a pool of thin CA, then shoving them into place, leaving about 4" clearance. This takes practice, so try this without glue until you get the hang of it, then go for it. If you mess up, just gently pull on each leg until it comes free, clean it up, and do it again. I have found that this has become one of my favorite parts of building a kit, now that I'm comfortable with it. If pushing it in to the proper depth gives you fits, take a piece of scrap styrene 4 scale inches thick, and use that as a spacer.

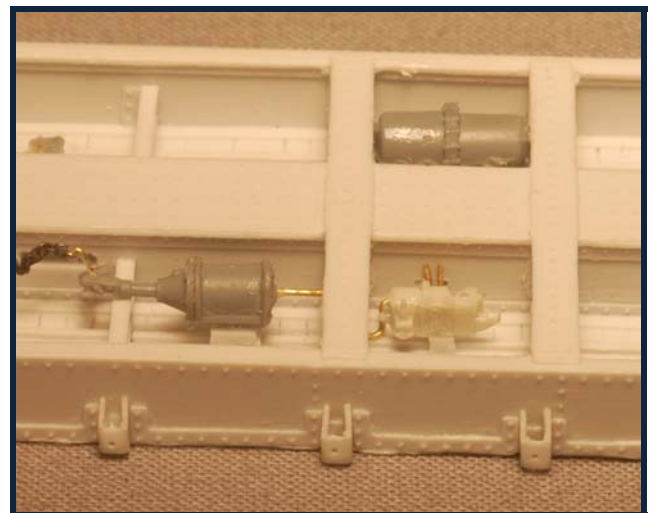
Now detail the underframe. I chose not to mount a trainline, as I will add lead shot later to some of the cavities to give it weight, and I did not want a detail which took time to do and would just be covered up, and which would also interfere with the even distribution of the lead shot. I did, however, mount the reservoir, AB valve, brake cylinder, rods and levers, and piping, according to the directions. Each of these shows when the car is on the track. The mounting of these details is covered well in the instructions; however, I chose to add piping to each detail before I mounted them to the underframe, a sequence that is much easier for me.

Pre-drill the holes in the underframe, for each of the details you choose to mount. The pipes between the reservoir, AB valve and cylinder, can all use .012" wire, and their holes should be slightly larger than this. A #78 or larger bit suffices. I am not exactly sure why I added all this piping, when some of it will undoubtedly be covered up later, but I think it is just fun to do.

I drilled #78 for the two reservoir pipes, then mounted short sections of .012" wire, sufficient to go into each pre-drilled hole and give the appearance of being continuous to the other side. I then pressed the reservoir in place. I then drilled the AB valve for one pipe to the cylinder and two to the reservoir, as per the photo. I did not drill the extra hole for the

trainline, but you could do so, if you wish. The trainline should be .015" wire or so, so the hole in the AB valve should be larger, accordingly. Mount a water trap behind the valve, on the trainline, if you like.

I placed two short sections of .012" wire into two of the holes in my AB valve, that were long enough to give the impression that they connect with the reservoir on the other side, and a third piece that was pre-bent to an "L" shape that makes the turn to go to the brake cylinder. Cut then a bit long, then shorten as needed. Mount the AB valve as shown in the directions and in the photo below.

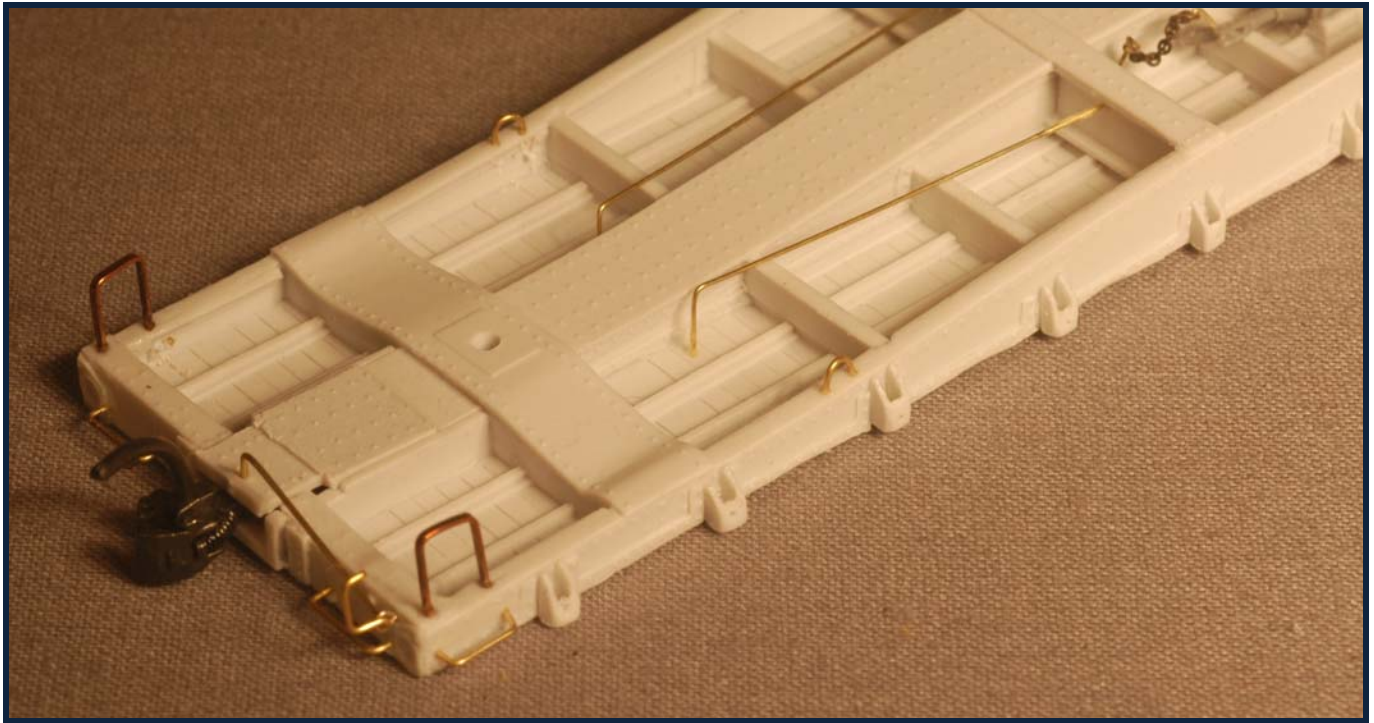


I then pre-drilled to a pretty good depth, and mounted the brake cylinder to its bracket, as indicated in the directions and shown below, but only *after* the pipe was cut to length. It is very easy to do it this way, with little fiddling around afterward. Make sure the clevis is pre-mounted to the brake cylinder also, as that aids in mounting the lever and rodding later.

Now pre-drill, and mount the solid sections of rodding, to your two brake levers (two on the dead lever and one on the far end of the cylinder lever). I chose to cut short, and then mount, the levers, to make their mounting easy. You may do as you see fit, as this is by no means the only way of doing it!

Secure the ends of the rods by bending and inserting into holes drilled in the underside of the deck, just inboard of the inner axle, and as close to the inside edges of the center sill as possible. This will ensure that there is no interference with the wheels or axles when the trucks rotate. See the photo below.

Create the towing loops found on the B&O cars by drilling #78 holes in the tapered face of the underside of each side sill as shown in the photos. I created my towing loops by bending wire around a #60 bit, cutting them off, and then selecting the best of the bunch for my loops. Insert each until happy with how they sit, then secure with CA. See the photo below.



Now drill for the four stirrup steps. Because I tend to break Delrin steps like those provided in the kit I substitute A-Line Type-A metal steps. I drill the outer hole using a #74 bit, then place each step in that hole with its inboard leg up against the inside of the side sill as a drilling guide. I then drill the inboard hole, remove the step, and re-mount it in both holes. I then hold it square and wick CA into the drilled holes to secure each one.

Once this is done, you can mount couplers in the kit's provide pockets, and place the coupler cover plate in place. It may require some trimming of the cover plate to get it to drop in place. Secure with CA.

Drill for, and mount an eye-bolt, in the lower left corner of each end sill, for the cut lever. I bent mine from .015" wire. Start with the lower-most outer bend, and work your way up. Bend the top bend, then another at the centerline of the car. Drill a hole in the bottom of the cover plate then mount the cut

lever, making sure it does not interfere with the interior of the pocket.

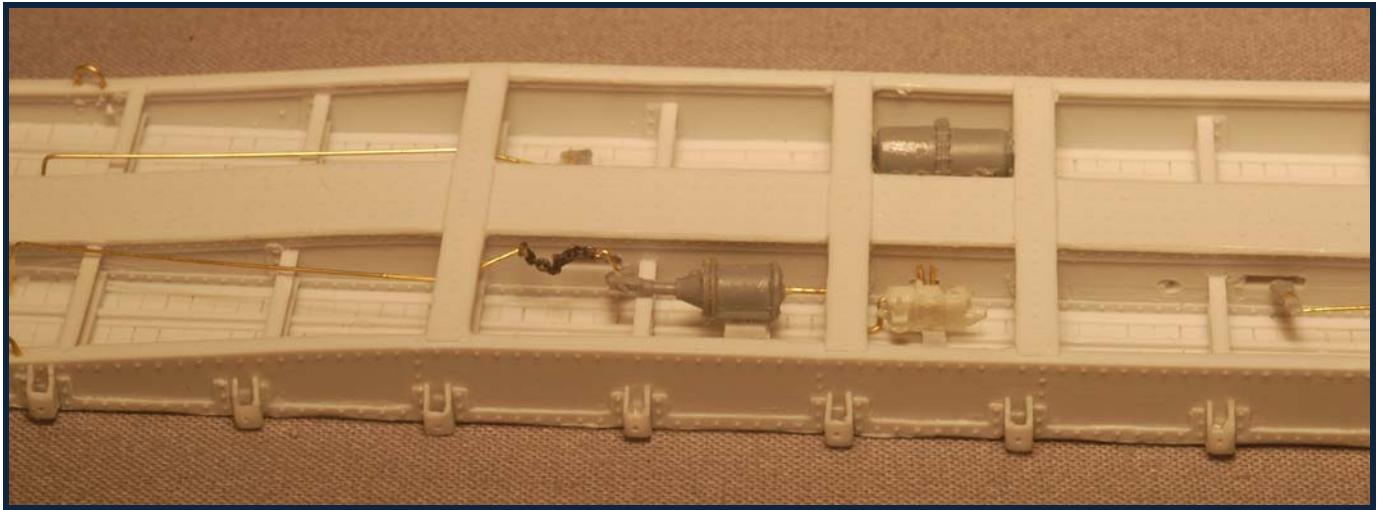
Drill for, and mount, air hoses, if desired. There is a pre-drilled depression in the end sill. I added mine later, to aid in painting, and to avoid losing them.

I chose to also mount the brake cylinder actuating rod and chain, on the end of the brake cylinder lever. I cut a short piece (maybe 12-15 links worth?) of pre-blackened fine chain from Builders-In-Scale, then bent a crook in a piece of .012" wire, and grabbed one end of the chain. Once the chain was slid in place in the crook, it was cemented in place with a drop of CA, and the piece of wire cut off to about 1/4". This will function as the lever end of the assembly. Now take the remainder of that wire, and do the same again, but do not cut the wire short. Now take your tweezers and take the short wire and insert it into the pre-drilled hole in the brake cylinder end of the brake cylinder lever. Cement in place and then cut the excess wire under the lever off. The dangling end



needs to be mounted like you did with the other rods, but with some slack left in the chain (to represent a released brake). I bent the end of the wire with the

chain to clear any shot I might add, and will then bend that down into positions afterward. Take a look at the photo below, and see if this makes sense.



Temporarily mount trucks. I drilled with a #50 bit for the truck mounting holes, then mounted Kato ASF A-3 trucks with 2-56 x 1/8" screws. You can choose what you like. Stewart 70-ton trucks would be a better choice, but I had none on hand.

Now temporarily tape the deck to the underframe, with the end with the brake wheel depression on the "B" end (the end to which the brake cylinder points). Make sure it is even all around. Mark each stake pocket slot in the deck, with a pencil, at each edge that requires enlargement. Make the pencil mark larger, for each inside edge that needs a lot of enlargement, and smaller, for those that do not. Remove the deck and file each stake pocket slot until it looks correct in reference to its pocket. This is easier done than said! Place the deck aside.

Now create your brake stand assembly. I could find no casting for the actual stand base, so I ginned one up by using portions of a resin bracket I had, as a substitute. You can alternately use a piece of .02" styrene sheet cut to approximately 8 inches wide, and install a bottom "lip" of .01 x .03" strip, as shown in the photos of the finished car end. You could put a rivet in each corner of the flange as detail, if desired. Pre-drill for .015" wire, the ratchet assembly and brake wheel. The wheel can be cleaned up on sandpaper, then cut out and cleaned up. I took the edge of my hobby knife blade, and rounded the edges. Pre-drill it also. Mount the wheel on the end of a piece of .015" wire, and cement in place when mounted 90 degrees to the shaft. Set aside for now. You can also see the way this all goes together by

looking at the 3/4 end shot of the finished model, below.

I did not mount a retainer, as I could not find a photo that showed exactly where it was located. Should I find one, I can do so, later.

Pre-mark the top of the car body casting for the center of the brake shaft by temporarily holding the deck casting in place and marking where the shaft will go according to the center of the brake wheel depression in the deck casting. That pencil mark will be where the shaft is centered during this last assembly procedure.

You have a choice now to make as to whether or not you will mount the brake wheel and shaft before, or after, painting. I chose to do it afterward to avoid possible damage and a more complex painting process. If you choose to wait, you can come back to the next step later.

Now mount your brake stand backing plate so it extends about 8 inches beyond the end of the car, and centered below the brake wheel pencil mark (approximately centered on the edge of the draft gear housing). Now mount the ratchet assembly on the top of the brake stand plate, so the ratchet hole is also centered under the brake wheel depression mark. Drill through the entire assembly with your #78 bit, making sure the hole is vertical all around.

### Painting, Lettering, and Final Assembly

I chose to paint the model in several phases, due to the fact that I wanted to paint and mount the deck after initial painting, and that I also wanted to weather it in a way that would not weather the deck boards the same as the steel body parts.

I painted the ends of the deck, including its edges, and the basic car body, with a lightened shade of black, using Modelflex Black and Reefer White, mixed to suit (just off-black). I let this dry, then hand-painted the deck boards with Floquil Primer Grey (remember to paint the edges of the boards, but not the steel parts!). I touched up any flaws and set it aside.

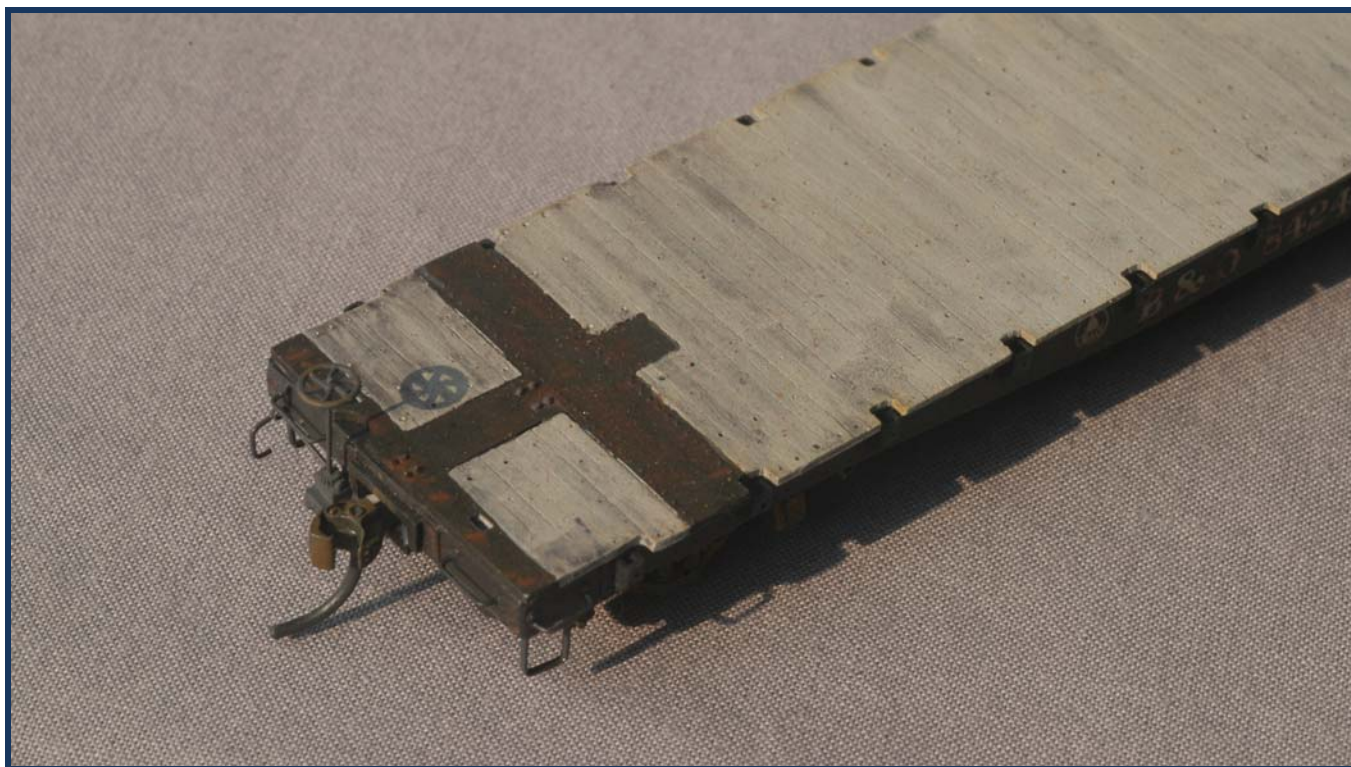
This dried for several days, then I hand-weathered the deck steel parts with various light washes of Rust and Burnt Umber tube paint, in several steps. This gave the steel parts areas that looked different from one another, and like they had been scratched by loads, bracing, boots, and such.

The trucks were weathered with Grimy Black, and the treads cleaned by rolling them on a piece of scrap track over which was placed a piece of old cloth soaked in thinner. Set aside to dry.

I then applied the decals to the car body. I used photos as a guide, and purposely placed my class and dimensional data a little staggered as per a photo I had that showed them done that way. Choose your own variations according to photos. I set these in place with MicroSol, then let dry for several days.

I then over-sprayed that with a mixture of DullCote and Glaze, for a matte finish, and let sit for a few days more. You could alternately use fast-drying acrylic, if you like.

This was followed by a light overspray of 10% Rust and 90% Mineral Spirits, and later the same proportions of Grimy Black and Spirits. I let that dry for awhile and then mounted the deck and brake assembly, which was also hand-weathered. I finished this stuff by giving the deck a light wash of Grimy Black to bring out the board and deck bolt details.



The trucks then had their wheelsets popped out, and the side frames over-sprayed with this same rusty mixture at the same time as the car body.

This was let dry, the wheelsets popped back in, and the trucks re-mounted. Once all this painting and weathering is done, it is finally safe to attach the brake wheel. Mount the brake wheel and shaft assembly you prepared earlier, with the wheel about

18" above the surface of the deck. When vertical all around, cement in place with a dab of CA from the underside. Cut off the excess wire below the plate, with flush-cutting nippers.

Some final touch-up of the end of deck pockets and the draft gear pocket remains, but that will be easy.



This car begs for a nice load, or at least some left-over dunnage or blocking. Consider a smaller load so as not to obscure the fine detail of the deck and car itself. An auto or truck frame is also a possibility if you model a P-25a or P-25c.

### Final Notes

I really enjoyed this kit, which I cannot say about all resin kits. I hope that ProtoWest does well enough with this kit to consider doing other HO-scale resin freight cars. Fixing up the instructions would be a minor task, and would result in an overall package on par with the best of any offerings. I thoroughly recommend you pick one of these up for your fleet.

### References

- *B&O Color Guide to Freight and Passenger Equipment*, page 31; Craig T. Bossler; Morning Sun Books, Inc., 1996.
- *Official Railway Equipment Register*; The Railway Equipment and Publication Co., NY, NY; various dates



B&O 8375, a class P-25a flat car in Fayetteville North Carolina in 1951. Col. Chet McCoid Photograph. Bob's Photos.



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## BUILDING A B&O S-1/S-1A IN N-SCALE

BY: TONY HINES

PHOTOS BY AUTHOR UNLESS OTHERWISE SPECIFIED.



### Introduction

This project was started after reading the Summer 2006 *Classic Trains* article on the “Big Six” and the resulting discussion on the B&O Yahoo group. B & O trainmen dubbed the big, fast 2-10-2s “Big Sixes” since the S class locomotive’s bore road numbers in the 6000 series. The locomotive intrigued me enough to see if I could come up with a reasonable substitute for one in N scale. I am not much of an historian so I relied heavily on the members of the B&O Yahoo group for information leading up to this project. The big push to start the loco came when one of the members supplied me with copies of drawings for the S-1s from an older railroading publication. These drawings gave me measurements to work from and something to compare all the photos that I had collected in such books as Sagle and Stauffer's *B & O Power*, Dickens and Semon's *Baltimore & Ohio Tracksides*, and Mellander, Kaplan, and Price's *B & O Steam Finale*. After studying the drawings and photos I felt I could tackle the project. It would be my first major loco build. One deciding factor that made my decision to tackle this easier is that the

boiler is a relatively straight and constant diameter. Little did I know the boiler was not going to be the hard part.

Modeling B&O steam locomotives in N scale is an act of compromise because very little is commercially available that is accurate for the B&O. The “Big Six” was no different; only two non-brass US 10 wheel locomotives have been produced over the years, the Minitrix 2-10-0 and the Con-Cor USRA 2-10-2. Neither is close in size to the S-1. The Minitrix 2-10-0 is smaller but may be a decent starting point for an early S class loco with smaller drivers. I haven't done the research to know for sure. The Con-Cor loco is too large and has some mixed reviews on quality. I needed to find another source for a chassis. I was about to give up on the project when I came across a Southern Pacific 2-10-2 by Russell Straw. (Russ' web page: <http://hometown.aol.com/ramblinrus/myhomepage/index.html>). His 2-10-2 was based on a Kato Mikado 2-8-2 chassis. By adding a driver in the rear and flipping some components around, the Kato

mechanism makes a very nice looking and running 2-10-2. Would the mechanism work for me?

Fortunately, I had found a pair of Mikados a couple months before at a local train show. This gave me one to tear down, and one to leave assembled as a reference. I measured one of my models and printed the S-1 drawings in N Scale to get a side by side comparison. The dimensions were very close. The wheelbase of the extended Kato Mike ended up about a foot longer, but that is not uncommon in N scale due to the extra spacing needed to accommodate wheel flanges. The other dimensions were within a couple percentage points error so I had my candidate for the chassis.

### The Model

After corresponding with Russell about his 2-10-2 I learned the basic idea how this modification was born. When one adds the traction tired driver to a Kato Mikado, one ends up with a spare driver set. This provides the parts to make a 10 driver loco out of what started with 8. The basic idea is to flip the #1 axle which is only driven by the side rods, back around the #3 axle to the newly created #5 axle location. The #5 axle will now be driven by the side rods. Here is where one has some options.

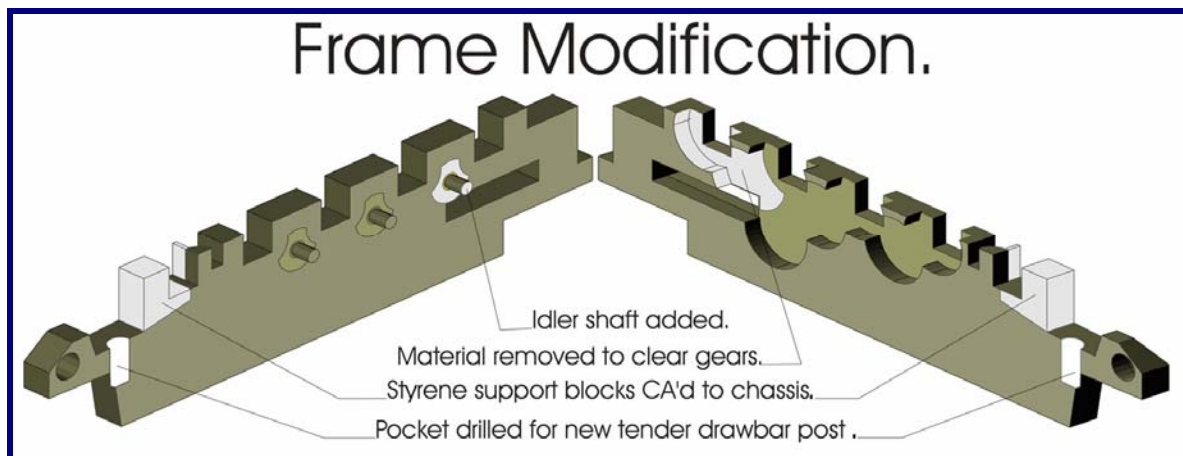
One option, with just the addition of another set of side rods, is to drive the front axle as before. This requires grinding off or removing the gear from the extra driver one has or grinding a pocket in the chassis for clearance. Nothing else needs to be changed and one's loco will work fine. A second option is to take advantage of the gear one has on the extra axle and drive the #1 axle with the gear train of the loco. This in my opinion creates the more robust mechanism and would decrease issues with side rod

wear. My goal with this loco was to come as close as I could to the pulling power of the real thing and the drive train was going to be stressed to the limit. I wanted to make sure it was as strong as I could make it. Doing this requires removing frame material for both the gear on the axle and the idler gear that one will need to add. One will also need to drill a hole in the opposite frame to install the idler gear shaft, as well as a spacer to keep the idler gear aligned and not rub the frame.

The first task was to build a running 2-10-2 chassis. Armed with pictures of Russell's loco, drawings of the S-1, and my Dremel Tool, I started taking apart my Mikado. If one is not comfortable disassembling the loco, stop now because the work gets much more involved after this.

Strip your loco down to its individual parts. This loco is one of the more puzzling to disassemble at first, but once I got a feel for the way Kato thinks, disassembly was actually quite simple. It is just a matter of knowing the order that things need to come apart and being brave enough to tug on a part, knowing it won't break. Once the mechanism is down to the frame halves, scrub it clean in soap and water. This is to remove grease and possible contamination of the glues used later. It also helps keep the filings from the chassis modifications from sticking in nooks and crannies when grinding the frame halves.

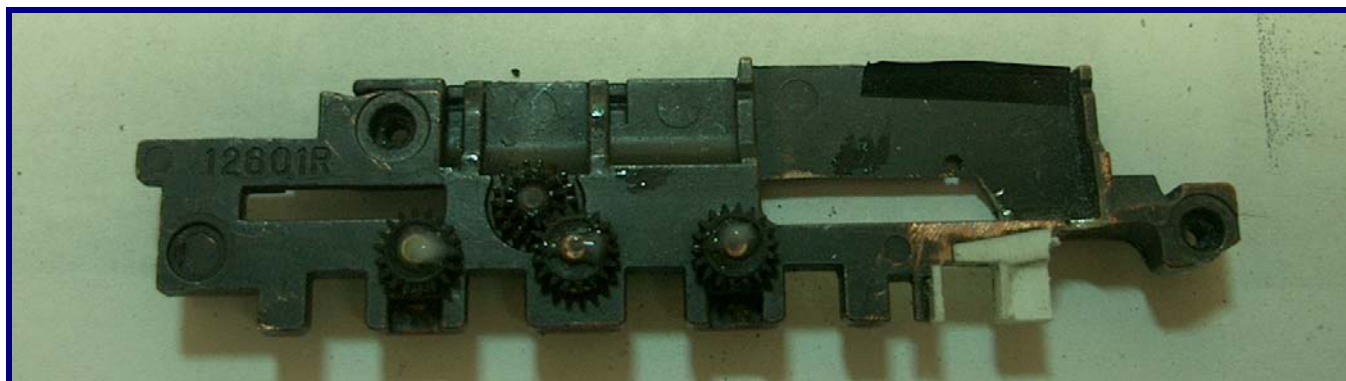
The first real work is to add the axle pocket for the #5 axle. The tender drawbar pin is roughly in the middle of where the rear driver needs to be. I measured the spacing between the axle pockets on the chassis and cut the pin back to match. After filing back the drawbar pin, I filled in the rest of the area with styrene to complete the pocket area.





The styrene is glued on with alpha cyanoacrylate (ACC) glue, but I wasn't sure it would hold. However, after it was glued in place, it was filed, sanded, and shaped without coming loose. One can see in the photograph below how the rear axle pocket is created. Unfortunately, I don't have any measurements as it was done by trial and error. I reassembled the frame halves, set #3 driver in the frame and then tested the #5 axle fit multiple times. I started small and then filed and fitted the axle pocket

until the two axles rolled freely with no binding. Instead of trying to deal with all the valve gear and eccentric rod, I removed it from the #3 axle and used some spare crank pins to hold the side rods on the #3 axle while testing. Also remove material on the outside of the frame that was hidden behind the firebox to clear the drivers. One can see how much was removed in the photograph on the next page. Once one has the #5 axle working properly, the work shifts to the front of the loco.







The fastest way to create the new front driver is to grind the gear carefully off of the axle while leaving the axle tube intact. One then needs to drill a new crank pin hole on each wheel which is easier than it sounds because the hole is already there in the back of the wheel casting. It just has a thin face molded over the hole that needs to be poked through with a very small number drill. Doing this will basically recreate the front driver set one has just moved to the back of the loco. Replace the axle, add a second set of side rods connecting the #1 axle to the #3 axle and it is done. However, I went a bit further and took advantage of the geared axle. I had planned for this loco to have an all brass boiler to take advantage of as much weight as I could for traction. I didn't want to encounter problems of side rod failure I had heard of when weight was added to side rod driven locomotives.

I looked at the frame and decided plenty of room existed for another idler gear and the front axle gear. Besides, Russell had done his mechanism this way so I knew it could be done. One must remove the material shown in light gray on the frame modification illustration. The axles and gear must have plenty of room to float side to side to allow the loco to deal with tighter radius curves. I started by making room for the axle first. A Dremel tool with an end mill is what I used. For those with a milling machine, the process is much easier. One must make

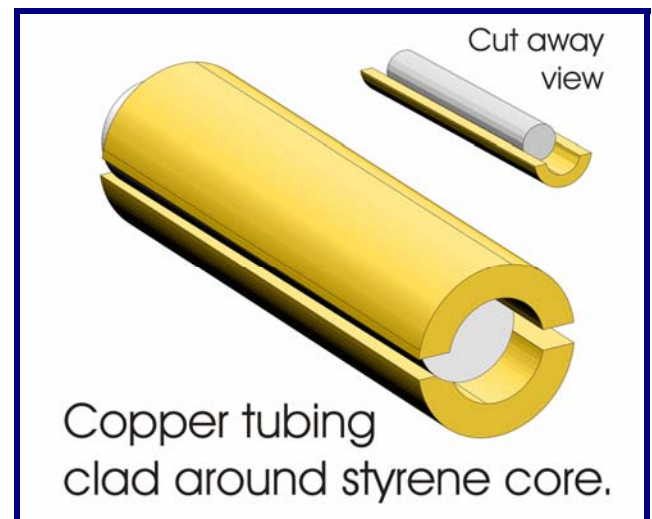
sure that the axle and gear have plenty of side to side play and the gear doesn't rub at either extreme. Check this by periodically reassembling the frame halves. Once one has the pocket milled for the axle gear, one needs to make room for the idler gear. This is eyeballed for the most part. Use the two other pockets for reference. After there is enough clearance to install a geared driver in the left frame half, add a shaft for the idler gear in the right frame half. This needs to be a precise placement so it is best to measure four times, drill once. To aid in marking for the hole, I used a straight edge held against the two existing idler shafts to keep the mark for the new shaft aligned. I then measured the spacing between the two existing idler shafts and transferred that to mark the location for the new shaft. I also suggest drilling the hole for the shaft undersized at first. One can then place a smaller shaft in the hole and assemble the gear train and check for binding. When drilling for the actual shaft size, adjust the shaft center if needed to cure any binding. For the gear shaft I used brass tubing that matched the hole in the idler gear. Also recreate the spacer that is molded into the frame for the other idler gears with a piece of styrene. The idler axle and spacer were then glued in place with ACC. After test fitting and making sure that the mechanism rolls freely, stick the motor in and make some test runs upside down in a cradle. If there is any binding or gears rubbing, fix it now.



We now have a working mechanism, but close inspection reveals there are no brake shoes between the 4<sup>th</sup> and 5<sup>th</sup> axle and behind the 5<sup>th</sup> axle. The problem is, the gear cover is designed for a 2-8-2, not a 2-10-0. The gear cover shown in the photograph has had the rear drawbar post index pin section removed for testing. At the time I had a spare Mikado so I felt comfortable doing that. The gear cover needs to be lengthened and at the time, Kato didn't have additional cover plates available. This is where the resin casting kit comes into play. With the re-release of the 2006-2007 Mikados, the cover plates may be available again soon and this will just be a matter of buying another plate and splicing them together. Until then, this is the way I tackled the problem. One needs to make a copy of the gear cover plate out of resin. This was the first piece I had ever copied and molded from resin, and it was not the easiest to start with. The creation of the mold went well, but the brake shoe detail was very difficult to copy, especially getting the resin to fill all the voids in the casting. I ended up trying 5-6 times before I finally got a couple of good copies to work with. I had planned on making two copies, using those two copies to create the correct part, then re-molding that part to make a single unified cast gear plate. Let's just say that didn't happen and I was lucky enough to get one good cast of the back section of the gear plate and grafted it onto the stock Kato plate. If one added the gear driven #1 axle, one also needs to make a clearance hole in the gear plate for the #1 gear.

In the previous photo of the completed loco, one can see the casting mated with the stock cover plate. One can also see the side rod arrangement, how the rods overlap at the #3 driver, and the blinded third driver. This was done to allow the loco to negotiate 11" radius curves. Keeping the tender removable was important to me. The gear cover plate has a pin that inserted into the original tender drawbar post. With

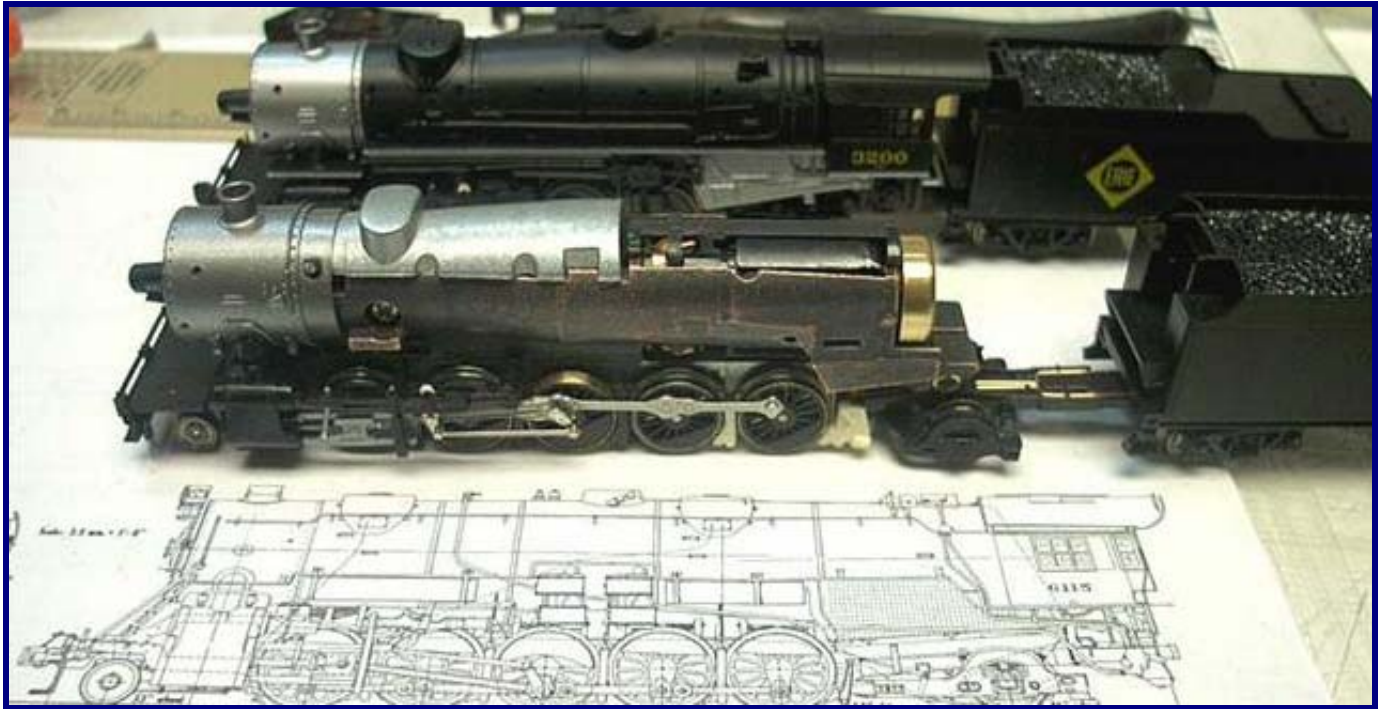
the lengthening of the loco, that post is now gone. I kept the pin intact on the lengthened gear cover and used that to locate a new drawbar post. I wanted to keep the tender connection removable and still use an electrically live tender. Below is a drawing of what I eventually came up with.



I started with a piece of thick wall copper tubing that was the same diameter as the original drawbar post. I then cut and filed the tube to just slightly less than half its original diameter as shown in the cutaway view. I then found a piece of styrene that fit inside the tubing. I then glued two of the half tube pieces around a piece of the styrene. For this I used epoxy and let it ooze out the cracks between the two halves. One must make sure that the two halves of the tubing do not contact each other and the epoxy in the gap will help prevent this. Once the epoxy has cured, I placed the tube in a drill and sanded off the excess epoxy and made sure it was round. I then drilled some of the styrene out of one end so that it would fit over the pin on the gear cover plate. I also placed a styrene sleeve over the post to help hold the two pieces together and act as a spacer, which will be

seen later in the build. The reason for the complex post is that it will be electrically live. The next step is to mill each half of the frame with a semicircular slot in line with the post locating pin on the gear cover plate. The two halves of the post will be sandwiched between the two halves of the frame. The post will

share the same electrical contact to each half of the frame just as the original did. Now one can use a Kato style drawbar to connect the tender and not need to worry about wires breaking between the loco and tender.



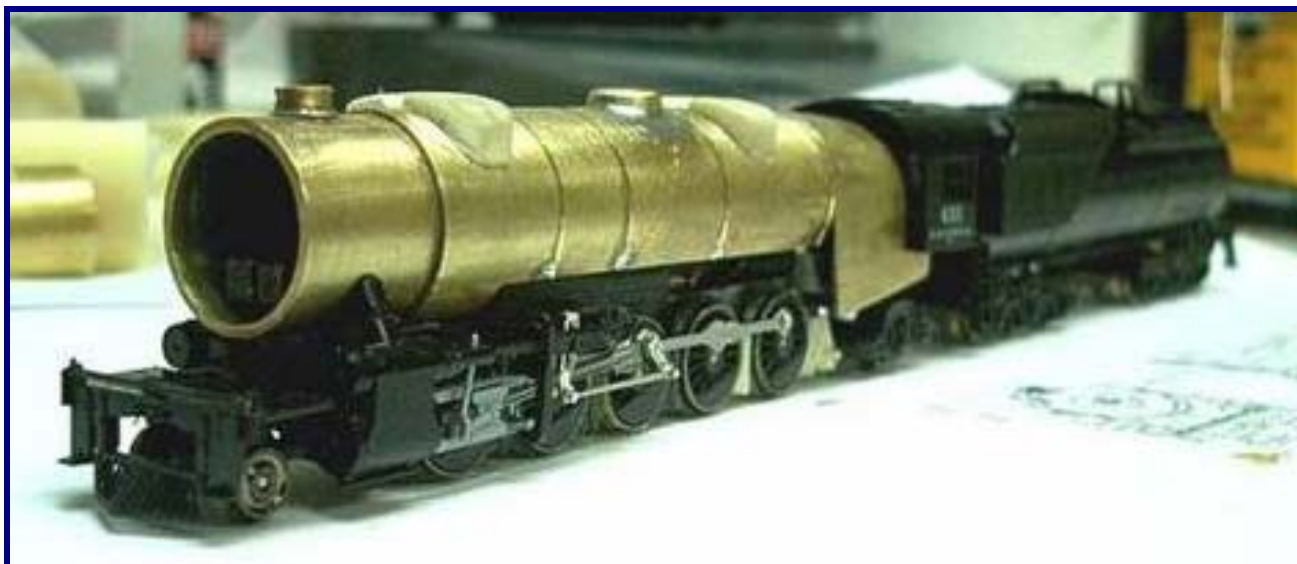
In the photo above the stock Kato tender is coupled to the new drawbar post for testing. Also shown is the Model Power Delta trailing truck now installed. The loco is sitting in front of a stock Mikado for comparison, and the N scale printed plan is in front. The loco sizes up quite well to the drawings.

The trailing truck is the next problem to overcome. After stretching the wheelbase, the trailing truck, which had a nice relief in the chassis for clearance before, now ends up smack in the middle of a large blob of frame where the rear frame screw is. It takes a few techniques to get around this obstruction. First and most obvious is to grind, file, whittle and hack as much of the frame away as possible while still retaining enough material to screw the mechanism together. If one is building a loco that can use the stock Kato USRA trailing truck, then one really doesn't need to do too much more. When one uses the Delta trailing truck, a few problems show up. First the wheels on the Model Power Delta truck are much larger than the Kato trailing truck so one needs more clearance. The easy answer is to switch wheels

back to the Kato. The Model Power truck does not use a needle-point axle but a clamshell style clip. The Kato axle will not work in it as is. One must remove the clip parts and then drill one's own needle-point pockets for the Kato axle. Be very careful when doing this because the truck frame is very fragile once one removes the center axle clip parts. I glued mine to strengthen it after I almost broke it into many small pieces.

Once the trailing truck is complete, mechanically the loco is pretty nearly finished. Now that the mechanism is running like a 2-10-2, it needs to look like one. The boiler is built from various sizes of brass tubing. Everything brass is soldered together for both weight and durability. The area where the firebox tapers down to the cab was made by opening up a piece of the boiler tubing to create a U shape, then sanding the front edge at a slight angle to match the taper. Below is the initial test fit of the main boiler and firebox section. The Kato smoke box happened to fit inside the tubing I was using and had it been slightly bigger, I might have used it.



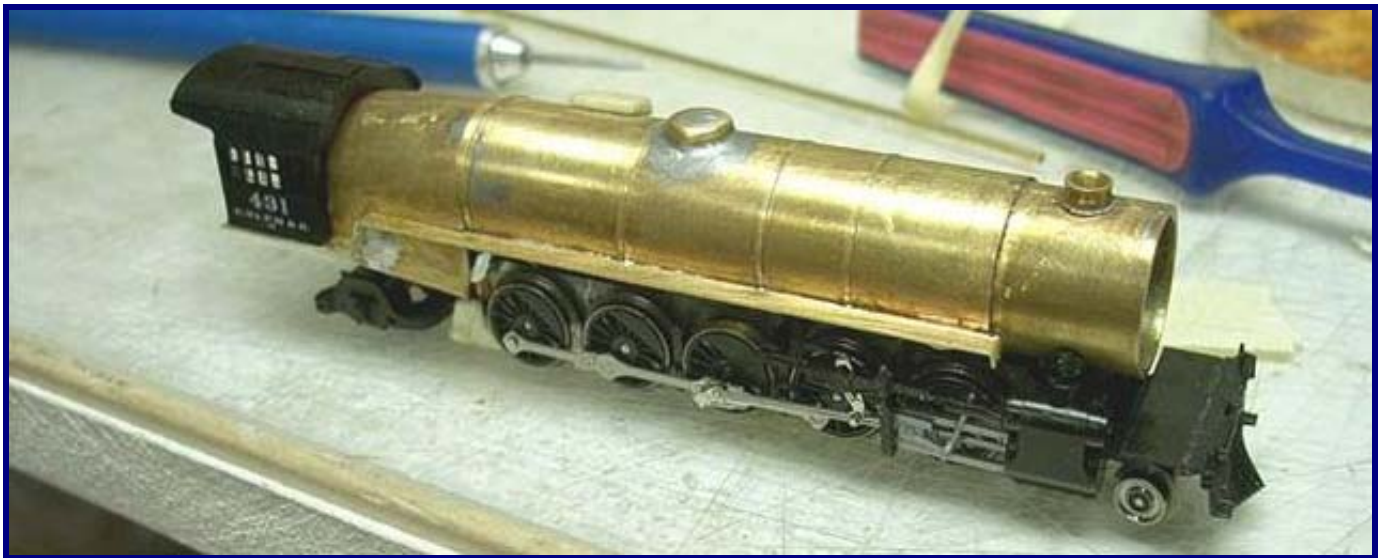


The smoke box section ended up being made from some extremely thick wall tubing because I wanted as much weight as I could get up front. One can also see the start of more details in this photo. The steam dome is a piece of brass rod turned to shape on a drill press and soldered into the boiler. The natural flow of solder acts as a fillet around the seams. The smoke stack is a piece of thick wall tubing turned on the drill press to create the lip on the upper edge. The lip around the smoke box where the stack protrudes was a happy accident caused by a dull drill bit. Also in this shot are the boiler bands. These were created by cutting .002" shim stock into strips, then wrapping them around the boiler and soldering just at the ends, inside the boiler.

The next step was to add the walkways to the loco. These were cut from .010" brass stock, bent and

fitted to the boiler. The walkways were made overly wide on purpose. Once they were properly fitted and installed on the boiler, I sanded them down to the proper size. The sand domes are a resin cast of a clay master that I made. The master was roughed in on a piece of scrap boiler stock, then a mold was taken of it still on the brass tubing. I then cast the first sand dome using the same tubing as the top to the mold. Once I had a resin hard copy to work with, I sanded, shaped and fine tuned the domes until I was happy, then made another mold of the new master. From this I created duplicates for the sand domes. The sand dome hatches, not seen in this shot were made by using a piece of brass tubing as a cutter in my drill press. I cut the hatches out of some .005" shim stock and they ended up with a nice upturned lip that added to their depth and detail.





I used a resin casting of the back head detail from the Mikado for the back head on the loco and matched the taper of the firebox to meet properly with it. One could cut up the Kato boiler to get this part. I preferred to make resin copies so that if I made a mistake, I could just cast another copy. Using the Kato back head allowed me to use the cab from the Mikado that matched the B&O style pretty well.



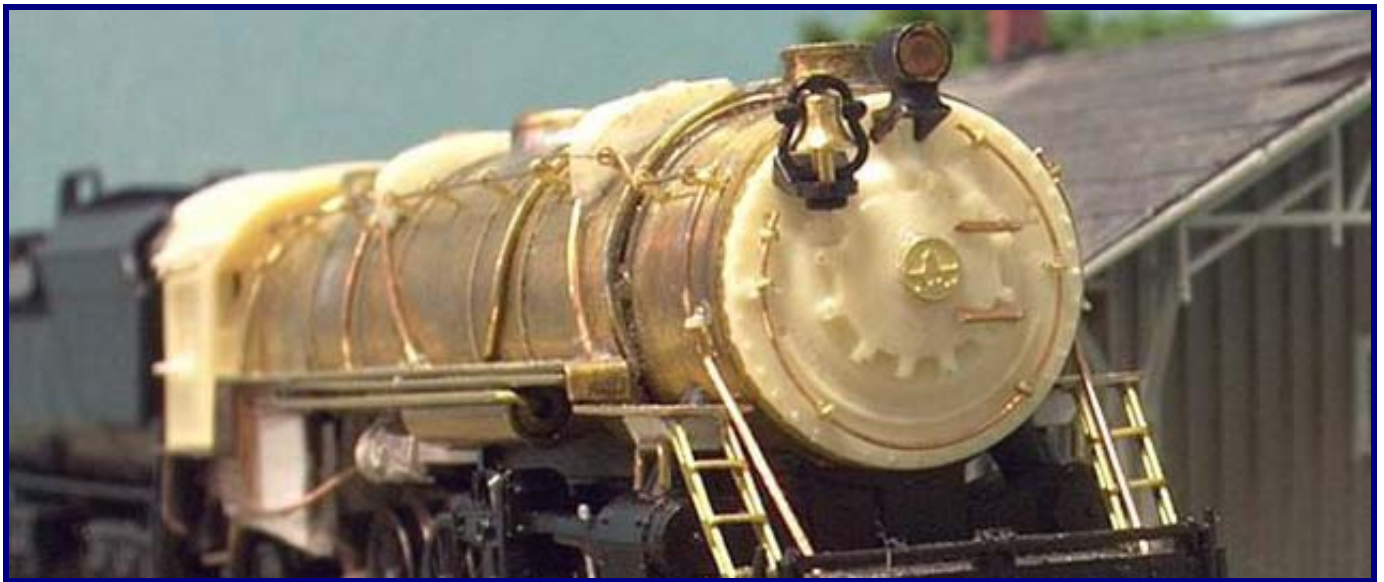
The only thing missing was the brakeman's extension, which was very common on larger B&O steam. Since I needed to replicate that, I made a mold of the cab and made a few resin copies to play with. Because of the shape of the piece, a multi part mold is needed. The brakeman's extension is a combination of parts cut from the cab copy and styrene. The detail under the cab is an original part from the Kato locomotive. I glued mounting tabs to the cab floor/seat detail piece so that the cab clips on the same way that it did on the Kato loco. In addition I glued a piece of wire in the top of the cab roof that indexed into the boiler, and the back head to hold the back head into the firebox.



The front of the loco is another detail that will make it uniquely B&O. The smoke box cover and door on the prototype was unlike any other loco model. I decided building my own was best. I started by casting a copy of the Kato smoke box cover to get the rivet detail. I used a piece of the same brass tubing that was used for the smoke box on my loco as part of the mold. This allowed the smoke box front to press fit into the front of the loco. After fitting the raw casting to the front of the loco, I started to make it unique to the S-1. I removed the low mounted headlight from the casting. I also sanded off the original smoke box door and details. I recreated the S-1 smoke box door by gluing strips of styrene on edge to a piece of styrene tubing. The strips represented the retaining clamps. This made a master that I could copy in resin. Working with a resin copy of the smoke box door made it easier to sand to the correct thickness and shape. The smoke box door was then glued to the smoke box cover. I then made a new mold of the assembled part so I could make copies.

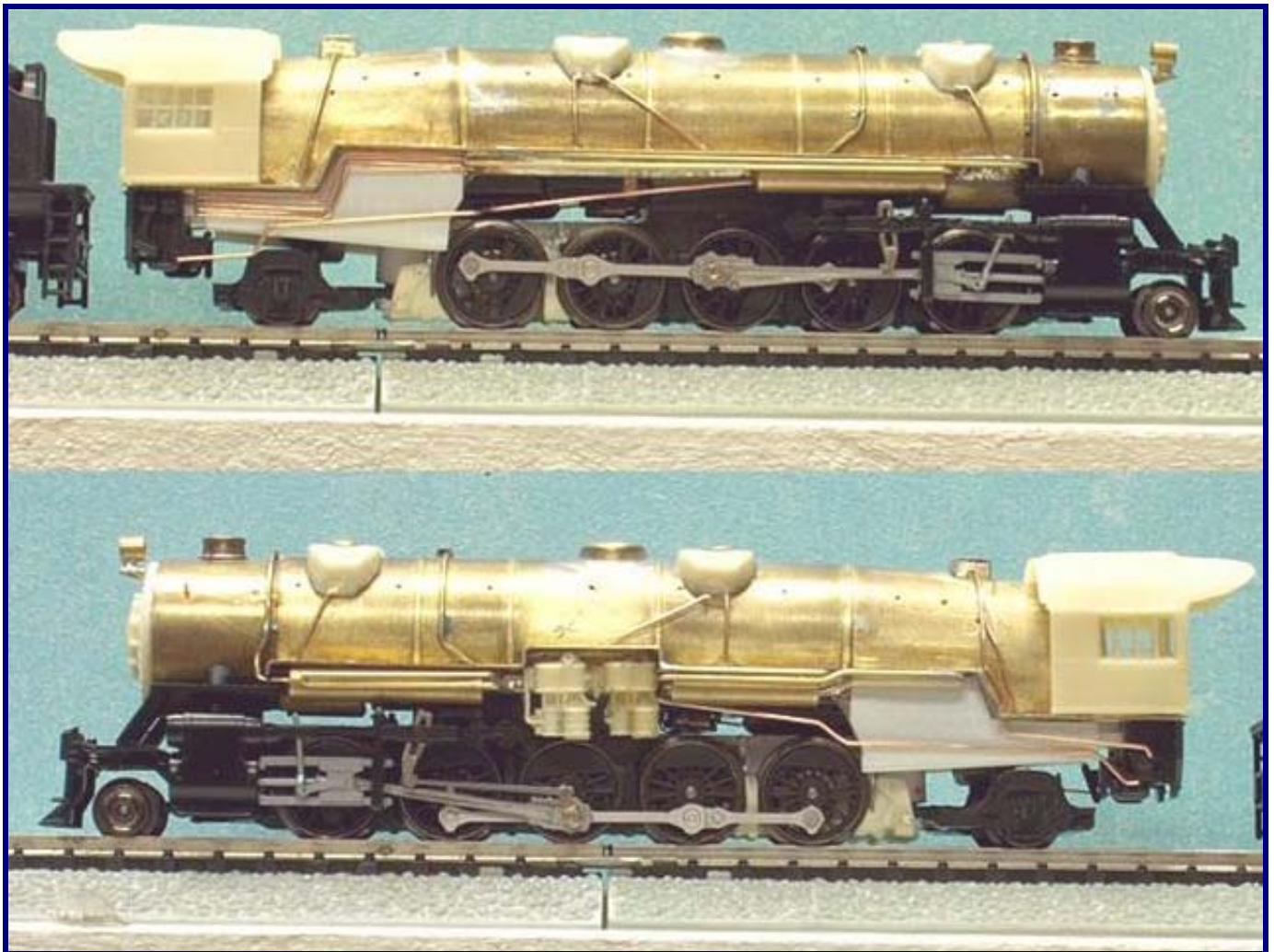
The high mounted headlight was the next part to replicate. I first experimented with a light pipe but was not satisfied. I wanted a light in the headlight housing that would shine, not just glow. The headlight was built out of a piece of appropriately sized tubing and two sizes of brass channel. The shapes were soldered together as larger pieces and then cut to shape and size. I find it easier to work with larger pieces and then make them small. A scrap piece of clear styrene was heated and stretched to the correct diameter to fit in the tubing as a lens. Magnet wire was soldered to the back of a Nano LED that was small enough to fit in the headlight housing. I painted the inside of the light housing to insulate the brass tubing and keep the LED from shorting out. Each of the magnet wires follow a leg of the bracket and thread inside the smoke box cover through the mounting holes. This makes an invisible installation of the headlight. I installed the lens and tinted it yellow/orange to help eliminate the blue/white tint of the LED.



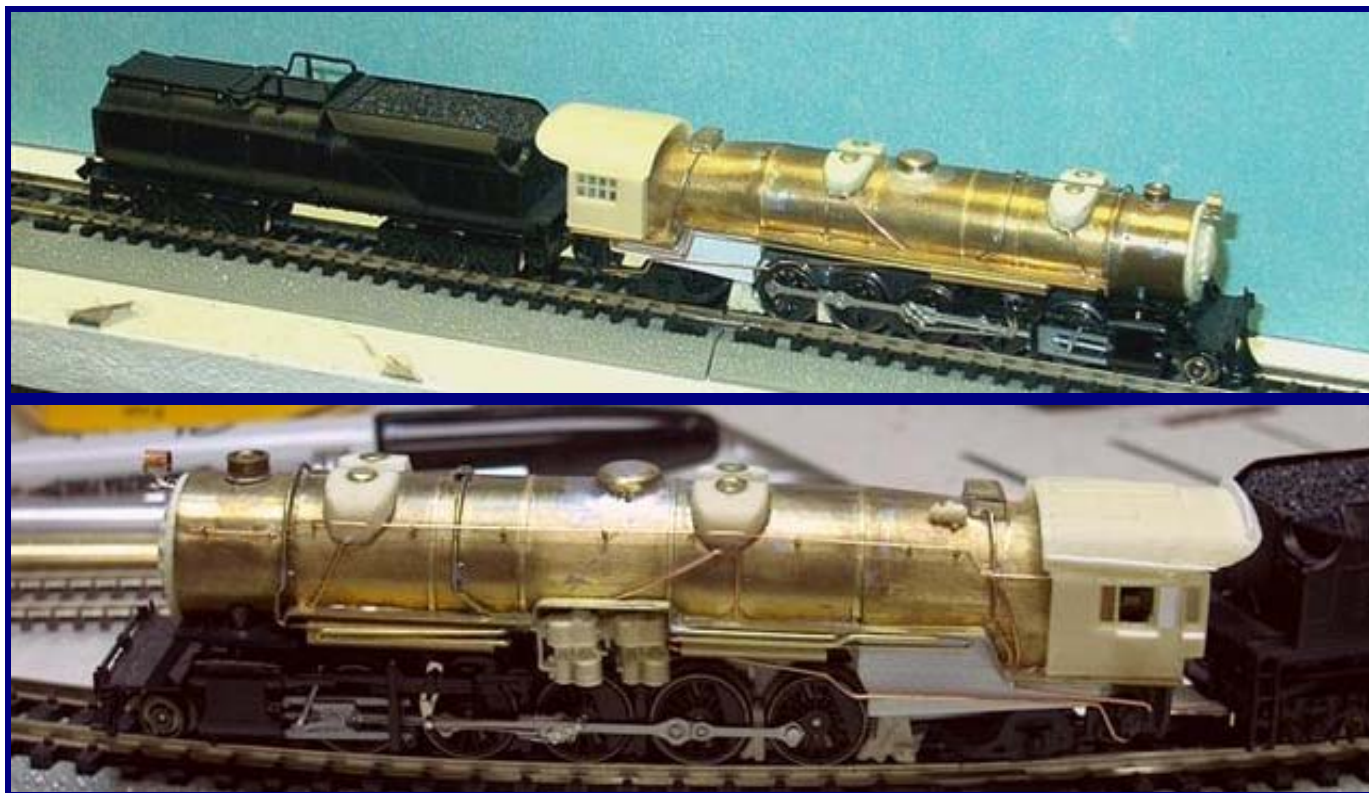


Most of the major assemblies on the loco are complete at this point. The handrails and piping are the next step. I wanted to make sure that my handrails were straight. One of the most distracting

things to me is a wavy or uneven handrail. In order to maintain a straight line when drilling the holes for the stanchions I created a jig. The jig clips to the boiler and uses the walkways as a reference.



This also secures the drill bit so that it does not walk when one is drilling the holes. In a few places the jig did not fit due to details being in the way, but on the other 20 holes, it was a useful tool and well worth the time to create it. The stanchions are from the Gold Medal Models (GMM) Steam Detail Kit and the handrails were Detail Associates .010" phosphor bronze wire.



The other details such as the pumps are cast copies of the Kato detail parts. The air tanks are concentric pieces of brass tubing soldered together, cut to length, then rounded by placing in a drill press and filing to shape. Over that, a piece of tubing matching the final diameter is glued. This makes the parts weigh as much as possible, gives the seam detail on the end of the tank and leaves a hole in the end to insert piping into. The tanks were then soldered to the boiler. Notice that in the various pictures through the build, some parts are installed, then later removed. This is not entirely on purpose. Something that many may not know is CA glue does not tolerate heat. When soldering parts to the boiler, if a glued part was next to the area, it would most certainly fall off. Many parts were temporarily tacked on while building to get a feel for the placement and look, only to be removed while more work was done so that the part would not be damaged.

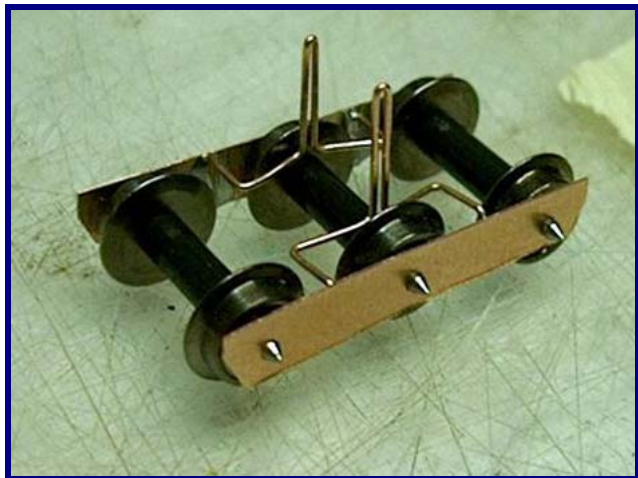
The firebox sides and stay bolt detail is created by embossing a piece of thin styrene from behind. The firebox sheets are then glued to brass firebox sides. I also glued a thin sheet of styrene on the inside of the

firebox to help insulate the brass boiler from the electrically live split frame of the mechanism. This also gave a place for the boiler to click onto the mounting nubs on the mechanism. On the bottom edge of the firebox sides I glued a styrene rod to mimic the ash pan. Piping was copied from a multitude of reference photos. Be careful when choosing photos; many variations of the piping exist depending on era and original build date. One could end up with one orientation of piping on the left side and a different variation on the right.

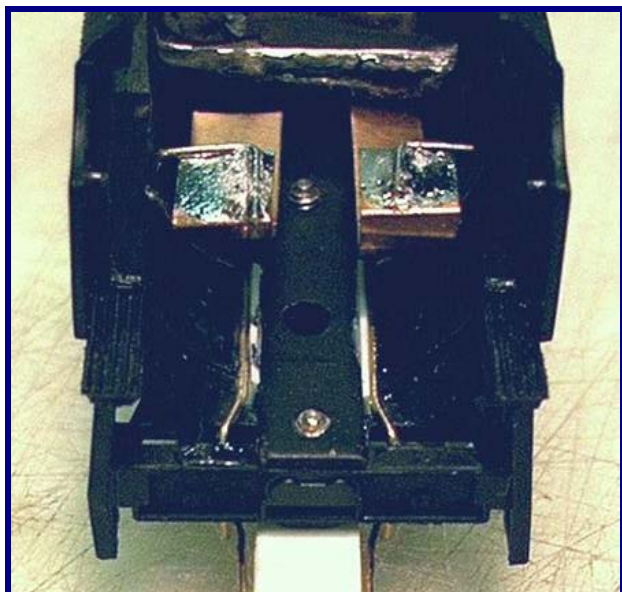
Other details help finish the look of the loco. The pilot was shortened by sectioning it and then gluing it back together. The pilot steps are from the GMM steam detail kit along with the B&O Capitol Dome for the smoke box cover. The pilot steps are soldered to a small piece of brass for the front walkways. Below that is glued a small piece of styrene that was modified so that it would clip into the original notch on the steam pipes above the cylinders. Not shown in the photo is the addition of a Micro Trains Z gauge front coupler to fill in the gaping hole in the front pilot.



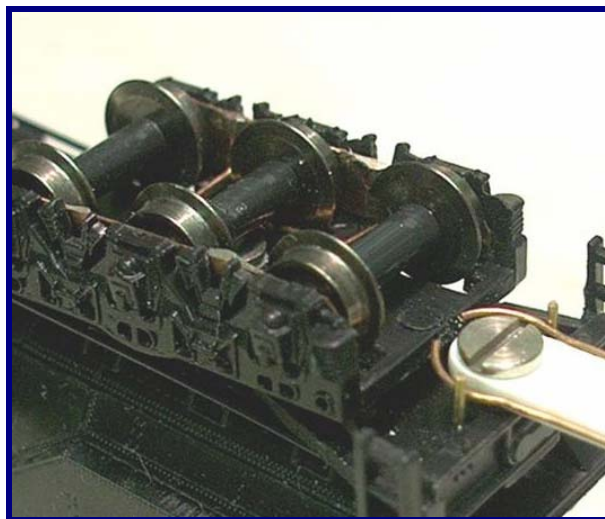
The last step before paint is to attach the tender. For my tender I used a Con-Cor Vanderbilt. The tender is molded after the C&O/B&O style Vanderbilt so it may be used as is. One could use the Con-Cor axle wiper system for pickup and just modify it so that one truck gets pick up from the left rail, while one gets pick up from the right rail. I chose to go a different route.



I created a semi-needlepoint axle pickup for the front tender truck. Side plates are made from phosphor bronze sheet. Holes are then drilled to match the axle spacing. I replaced the wheels sets with some split axle wheels from Kato caboose trucks. They have a narrower wheel tread than the Bachmann split axle wheel sets. This gives more room for the side plates. To the side plates, I soldered some .015" phosphor bronze wire bent to form a pickup post.



The posts contact a phosphor bronze wiper in the body of the tender that are soldered to wire that forms the pickup wiper for the drawbar. I opted not to do the same for the rear truck of the tender due to an incredible lack of space inside the rear of the tender. The drawbar is a copy of the Kato drawbar. I mounted it to the factory drawbar mount on the tender, rather than on the truck as Kato does because of the length of the locomotive and the resulting rear overhang. Mounting the drawbar to the axle pivot caused the drawbar to have too much swing in the curves and it would interfere with the rear detail on the locomotive.



The drawbar clips to the loco in the factory manner and is permanently mounted to the tender. While writing this article, Bachmann has just announced that they will be offering their version of this Vanderbilt tender for sale separately. It will have all wheel needlepoint pickup and will make building the loco much easier. The only problem I foresee is that if the drawbar mounts to the front truck, there will be clearance issues for the drawbar. It may need some adjustment in that area.





### Painting and Decals

Painting was pretty straight forward, Steam Power Black with a custom mixed Charcoal gray for the smoke box. Decaling came from a combination of the Microscale B&O Steam sheet and B&O Passenger car lettering. The steam sheet does not include the extended version of Baltimore and Ohio used on the Vanderbilt tenders. The passenger sheet has the extended version, but it is not exactly the right font. In N scale the difference is not noticeable though. The headlight is wired to the Kato factory light board with an additional resistor to protect the Micro LED. I still have not been brave enough to weather the locomotive. The closest I have come is using a little NeoLube on the side rods and crosshead slides to tone them down and hide the plastic look. I have also found that NeoLube works well on the smoke box after seeing Max Magliaro use it on a recent project.

### Final Thoughts

One may ask, after all this work, how does it run? This loco was built to run and be serviceable and it met and exceeded all expectation. I ran the loco for a total of about 15 minutes at home on a test loop for its shakedown run. It negotiated all the turnouts and curves on the loop with no problems. I then loaded it down with cars and ran out of room on the loop before I ran out of cars. My layout is still under construction, so I couldn't give it a real test at home. At the local show earlier that spring I had given a few of my friends operating at the Ntrak layout a hard time about a lack of steam power running. They told me that steam couldn't reliably pull the long trains that the crowds like to see. I told them about a few locomotives that I owned that would easily pull 50 cars on level track. They did not believe me and challenged me to bring a loco with me to the next show. This is where the S-1 would debut.

The next show scheduled was the NMRA Division Seven fall show. I brought the S-1 and a box full of hoppers. As backup, I brought along a Spectrum Consolidation and a Kato Mikado just in case something went wrong. I set the Consolidation on the track at first along with 40 cars. I wanted to test the track and make sure the cars were going to work together. It went around the track a couple of laps with no problems so I decided to swap the Consolidation for the S-1. The group was already impressed with 40 cars. The S-1 walked away with that load easily so I pulled back into the yard and added 20 more cars. Again the S-1 showed no signs of stress so I put everything I had with me on the track, 70 cars and a caboose. The locomotive slipped slightly before chugging out of the yard and then pulled away smoothly. It ran for about five minutes before I had a trip pin catch on a turnout and blow a coupler apart. I quickly pulled the car, re-coupled the train and let it run another 15 minutes with no other issues.

The only place the loco will ever get a workout like that again is on an Ntrak layout. At home it will be happy pulling 25-30 cars. I believe with a slower motor, lower gearing or both, it would probably be able to pull 100 cars. The loco only struggled starting the cars and that was not due to a lack of traction, but a lack of torque. I had to ramp up the throttle so much to overcome the stall on the motor, that when it unloaded, it would slip the drivers. This is not unlike the real thing though, so in a way, it adds realism to operation. The one feature I would still like to change in the loco is the valve gear from Walschaert to the correct Baker valve gear. Running the longest train on a layout with a single steam loco at the head end was enjoyable. Diesel trains of 3-4 units with fewer cars struggled around the layout. Showing what steam could do was a pleasure. A few people walked up and asked where I got the "Big Six". Telling them that I built it was extremely satisfying.



### Materials

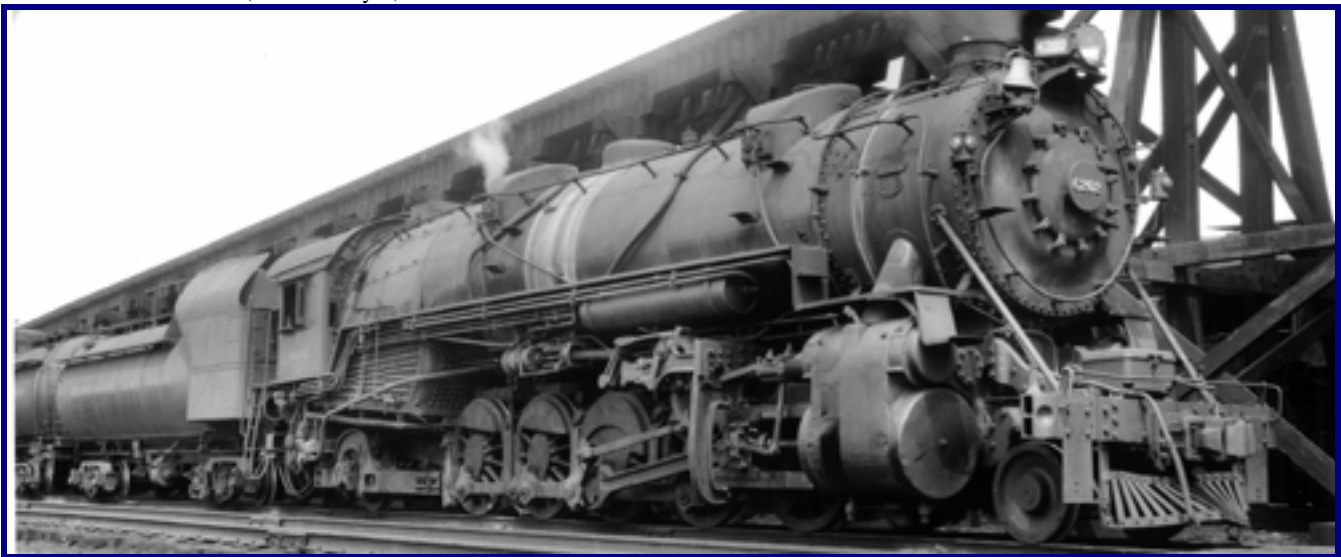
- 1 Kato Mikado (preferably from the second run or the current release)
  - 1 Vandy Tender The Con-Cor six axle Vanderbuilt is correct for this prototype
  - 1 381-939010 Valve gear/side rods
  - 1 381-931040 Idler Gear (optional)
  - 1 381-11604 Traction Tire Upgrade Driver (You can use 2 for more pulling power)
  - 1 MDP ? Delta Trailing Truck from a Model Power Pacific or Mikado
  - 1 304-16042 Gold Medal Models Steam Loco detail set
  - 1 514-N101510 Super Micro Yellow-White LED
  - 1 514-N5038 Magnet Wire
  - 1 K+S Assorted brass shapes and tubing K+S707 is a nice assortment
- A Resin Casting Kit of one's choice







S-1a 6207 at Cumberland, MD on July 2, 1939. Gleichmann/Grosche Collection.



S-1a 6202 at Newcastle Jct., PA on August 10, 1947. I.W. Saunders photograph, Gleichmann/Grosche Collection.



Cumberland, MD. B&ORRHS Collection.



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## READERS' GALLERY: B&O MODELS AT PROTOTYPE MODELER MEETS

BY: BEN HOM

PHOTOS BY AUTHORS UNLESS OTHERWISE SPECIFIED.

The following photos are a sample of models from various Prototype Modeler and NMRA meets that you, our readers, have been working on over the past three years, vividly illustrating that, despite proclamations of the demise of the model railroad hobby, there are still quite a few nice models being built.



B&O 269055, Class M-26A. Red Caboose HO scale model built by Ned Carey. (2004 Valley Forge Prototype Modelers Meet)



B&O 380934, Class M-53. Sunshine HO scale model, modeler unknown. (2004 Valley Forge Prototype Modelers Meet)





B&O 380934, Class M-53. Funaro & Camerlego HO scale model built and photographed by Steve Funaro II. (2005 Prototype Rails, Cocoa Beach, FL)



B&O 282048, Class M-61. Branchline HO scale model built and photographed by Eric Hansmann. (2007 RPM East Meet, Greensburg, PA)



B&O 111036, Mather Stock Car. Proto 2000 HO scale model built and photographed by Al Brown. (2005 Prototype Rails, Cocoa Beach, FL)



B&O 630471, Class N-34. West Shore Line/Funaro & Camerlengo HO scale resin model built and photographed by Dave Messer. (2005 RPM East Meet, Pittsburgh, PA)



B&O 604112, Class HC-25. Atlas HO scale model built and photographed by Dennis Lippert. This model is a stand-in for the larger Pullman-Standard 2700 cu ft version of the PS-2; all HO scale styrene PS-2 models are of the earlier 2003 cu ft version. (2005 Prototype Rails, Cocoa Beach, FL)





B&O C2075, Class I-5D. O scale model scratchbuilt and photographed by Lenerd Beck. (2004 NMRA Mid-Eastern Region Convention, Hagerstown, MD)

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**PLANNED FOR THE NEXT ISSUE**  
*Roaring Camp* Passenger car in HO Scale  
HO Scale O-27 Gondolas  
Modeling B&O Open Hoppers

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